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Examiner Handbook

on use of the

U.S. Patent Classification System

Documentation Organizations

U.S. Patent and Trademark Office

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INTRODUCTION

The authoritative guidelines for the creation, development and administration of the U.S. Patent Classification System are set forth, in detail, in "Development and Use of Patent Classification Systems" (DUPACS), published in January of 1966. Reference to DUPACS will provide more complete information on the general practices and procedures outlined herein.

The U.S. Patent Classification Systems must provide for storage and retrieval of every patent document which should be reviewed by a Patent Examiner in connection with the examination of patent applications. Therefore, in the aggregate, the system must be exhaustive of all subject matter patentable under the patent laws. Though the system is primarily designed to provide for patentability searches by Patent Examiners, it should be noted that the system serves a wide variety of other users, e.g., patent attorneys and agents, people involved in research and development, and the patrons of the Patent Depository Library (PDL) system.

The present state of the U.S. Patent Classification System reflects the uneven growth of a general scheme first expounded in 1900. Classification prior to 1900 closely paralleled economic groupings of the period with informal and arbitrary subdivisions to provide manageable size collections. Relationships, if they existed, among such patent applications were lost in the alphabetical ordering of titles assigned to each of the collections. Search notes, class and subclass definitions or schedule explanations either did not exist or, at most, were primitive.

While all of the present major groupings have been "revised" since 1900, each class reflects the theories of classification which existed at the time it was reclassified. The guidelines set out below are generally applicable only for classes revised since 1940. The location of the "miscellaneous" subclass is a good indicator of the age of any class. If this subclass is placed in any location other than the last subclass in the schedule, it can be assumed the class was reclassified prior to 1940. For further information on the age of any class, attention is directed to "Current Pages of the Manual of Classification", pages CP-1 through CP-7.

This handbook is intended for use by U.S. patent examiners. Two condensed versions are available for other users: "Handbook on Use of the USPC System" and "Handbook on Use of the USPC System for Patent Depository Libraries". This handbook is based on and draws heavily from the "Guide to the U.S. Patent Classifi-

cation Systems", issued in June, 1973. We are indebted to the author of that guide and the authors of earlier publications on patent classification for much useful information which has been reproduced in this handbook.

The authors wish to thank the many members of the Documentation Organizations who have read and commented on this handbook. Their comments have been integrated into this publication. It is hoped that this handbook will provide system users with a clearer understanding of the system, its use and its administration.

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I. ORGANIZATION OF INFORMATION

A. Bases of Classification

A number of different rationales have been developed over the course of the years to subdivide our files into searchable units. Collections based on each of the following rationales will be found in the system as it exists today. The strengths and weaknesses of each of these rationales must be taken into account when conducting any search.

1. Industry or Use

This approach divides art on the basis of the industry employing the art or on the use to which a device is put and, as such, represents unique collection showing all devices relevant to a given technology in one convenient location. Many of our original classes were created on this basis and a number of these classes survive today, e.g., Bee Culture, Butchering, etc.

One of the drawbacks associated with this type of classification is that it tends to separate physically similar art on a meaningless distinction and lengthens the search process. If used excessively, it also increases the likelihood of issuing two patents for the basic idea. By way of example, the 1872 classification system separated cooling devices on the basis of the product treated in these devices, e.g., beer or milk. These cooling devices could well be analogous and both should be considered in any search for cooling devices per se.

2. Proximate Function

To overcome this tendency to fragmentation, the U.S. Patent and Trademark Office has selected fundamental, direct or necessary function as the principal basis for many of its classification schemes. For purposes of brevity, the expression "proximate" has been substituted for direct, fundamental or necessary. "Proximate" function therefore means that similar processes or structures that achieve similar results by the application of similar natural laws to similar substances are considered to have the same fundamental utility and are grouped together. Our current system provides a single collecting area for all heat exchange devices, e.g., milk coolers, beer cool-

ers, etc. Once collected into this single area, the art is further subdivided on features essential to heat exchange devices.
Utility may have reference to (1) the function which a process performs or a structure or composition can perform, (2) the effect of a process, composition, or structure, or (3) a product produced by a process, structure or composition. Proximate function as a basis of classification is generally applied to processes, structures or compositions for performing general operations in which a single causative characteristic can be identified and which requires essentially a single unitary act; e.g., agitating, cutting, heating, filtering, etc.

3. Effect or Product

This rationale collects art into industrial or trade groupings based on the result produced by the art. This result may be tangible (e.g., the product of a manufacturing process) or intangible (e.g., the communication of sound at a distance). In the mechanical and electrical fields, this method of grouping is generally reserved for complex processes or structures requiring successive manipulations involving plural acts; e.g., telephone system, shoe making machine, etc. In the chemical fields, processes involving chemical reactions often are classified on the basis of the product produced.

4. Structure

Structural features such as the configuration or physical make-up of an object are used as a basis for classification only when the subject matter to be classified is so simple as to have no clear functional characteristics. This situation rarely arises with respect to the creation of a large group or class in mechanical fields, but frequently occurs with respect to subdivisions within such group or class.

A chemical compound always, and a stock material, often, are classified on a basis of structure; that is, on the basis of components and their arrangement regardless of the utility thereof. Mixtures or compositions also are classified on the basis of structure or components when possible, as in the case of alloys and colloids. Where such is not practical, compositions are

generally collected on the basis of the disclosed utility for the particular material.

B. Search System Organization

The following brief description is merely intended to give the users of this handbook an overview of the U.S. Patent Classification System. This description will also acquaint you with terms and phrases used in this handbook. Many of these terms and phrases will be explained in much greater detail later in this handbook.

A fundamental principle of the U.S. Patent Classification System is that each class, or part thereof, is created by first analyzing the claim disclosures of U.S. patents and creating the various divisions and subdivisions on the basis of such analysis rather than by first making a theoretical arrangement or ordering and then attempting to place the patents into such arrangement.

In the U.S. Patent Classification System, like subject matter is drawn together in large groupings called classes. These classes are subdivided into smaller searchable units called subclasses. The sequence of pattern arrangement of the subclasses within each class is called the class schedule.

Each class, and subclass, with the exception of the Design classes, is titled and defined. The title and definition of any subclass in a class schedule must always be read as including or being further limited by (a) the title and definitions of the class, and (b) the title and definition of a subclass or subclasses under which it is indented (see the Manual of Classification, page I-2).

U.S. patents constitute the bulk of the documents found in our system. These documents are designated as either "Original" or "Cross Reference" placements.

The "Original" placement is the primary classification assigned to any patent and is based on the claims in the patent. Original placements are used to define the content of a subclass and can and often are used to determine where newly filed applications are best assignable for examination.

"Cross Reference" placements are additional copies of an "Original" patent that are added to different sub-

classes in the system. For a further discussion of "Cross References", see Section V. of this handbook.

Our system also contains a substantial number of foreign patents and pieces of non-patent literature. These documents are placed into the system on a simpler basis than U.S. patent documents. Total disclosure is generally used in classifying these documents.

Certain tools are used to help access information contained in the system. The following discussion will provide detailed information on these tools and their use.

II. AIDS TO SEARCHING OR PLACEMENT

The actual mechanics of making a search or placing a document requires a familiarity with the following aids:

- The Index to Classification,
- The Manual of Classification,
- Class and Subclass Definitions,
- Classification Orders, and
- Classification and Search Support Information System (CASSIS).
- Automated Patent System (APS)

A. Index to Classification

The index to Classification is an introductory key to the classification system useful, primarily, for locating clues for specific subject matter. The Index comprises an alphabetical listing of technical and common terms characteristic of arts, processes, machines, manufactures, compositions of matter, etc., with a numerical citation to a segment (e.g., class or subclass) of the system in which pertinent patents or literature (prior art) have been placed and are to be found. The citations obtained through use of the Index are only a guide to the schedules, or portions thereof, of the identified classes. The definitions and notes associated with these classes-/subclasses must be reviewed for more precise information on the location of relevant art. This is true even though the citation given by the Index appears to state a restricted area of subject matter. Also, it is often necessary to resort to synonyms to locate an entry in the Index.

B. Manual of Classification

The Manual of Classification is the key to the classification system for a user with some general knowledge of

the system. It includes: (1) a collection of the class schedules, that is, an arrangement of the subclass titles and numbers in an organized order under each class title; (2) a list of the class titles in numerical order by class number; (3) a list of the class titles in alphabetical order; (4) a list of the classes by Examining Groups, and (5) a theoretical organization of some classes into major groups, attempting within each group to list the classes in a hierarchy representing a relationship for all applied sciences.

Class and subclass titles are used to identify major and minor segments of the classification system respectively. These titles are necessarily brief though intended to be as suggestive as possible with respect to subject matter contents covered by each segment. Therefore, it is best not to depend upon titles, alone, to delineate the subject matter in a class or subclass. Reference to respective definitions and notes is essential. If a search or placement is to be expeditious, accurate and complete, the Manual of Classification should be used only as a key to the class or subclass definition and appended notes.

C. Class and Subclass Definitions

Study of class and subclass definitions is essential to properly place a document or to obtain a proper field of search. Each definition consists of a statement of the scope embraced by the respective segment of the system that it delineates. Many of the definitions have accompanying notes. These notes are of two types: (1) notes that supplement definitions by explaining terms or giving examples, and (2) notes referring to related disclosures located in other classes or subclasses.

These latter notes are termed search notes and are helpful in qualifying and explaining the limits of a class or subclass. They generally state the relationship to, and difference from, other identified subject matter collections. It is intended for any search or patent placement that each note should guide a user to the extent necessary to reach a decision either to include or exclude an area containing relevant subject matter. The definitions and notes of each revised class are published in separate bulletins which are identified by the class number and title.

D. Classification Orders

Since new classification projects issue throughout the course of any year, it frequently happens that new

projects are not included in our regular search tools. Orders are used to bridge the gap between the time a project issues and the time that regular search tools are updated to include new information.

The order includes the following:

1. either the new class schedules or changes to existing class schedules necessitated by the project.

2. the changes to the definitions necessary to support the changes in 1. above,

3. source and disposition lists showing how the old art has been distributed into the newly established subclasses, and

4. a revised concordance showing the relationship between the newly established subclasses and their International Patent Classification (IPC) counterparts.

The "Reclass Alert Report", issued quarterly, notifies examiners of issuing classification projects. If you need a classification order, contact your Group Post Classifier.

E. Classification and Search Support Information System (CASSIS)

CASSIS provides on-line access to a data base which includes the Master Classification File (MCF), the Manual of Classification, the Index to the Manual of Classification, abstracts of selected recently issued patents, and the Manual of Patent Examining Procedure (MPEP). The following modes are available:

- Patent Mode (PM)
  Lists all of the classifications under which a selected patent has been filed.

- Classification Mode (CM)
  Lists all of the patents which have been filed under a given classification.

- Title Mode (TM)
  Displays the titles of a classification or subclassification in either Page (P), Full Title (F) or Coordinate (C) display submodes.

- Word Mode (WM)
  Allows a term search of all titles in the Manual of Classification.

- Index Mode (IM)
  Allows a term search of all titles in the Index.

- Patent Abstract Mode (PA)
  Ranks and displays classifications for all patents contained in the CASSIS Data Base whose abstracts contain a selected term(s) or provide a list of patent numbers for these documents.

- MPEP Mode (MP)
  Allows a term search and/or display of MPEP sections.

Terminals for accessing CASSIS are located throughout the PTO and, additionally, in many Patent Depository Libraries across the United States.

See CASSIS Users Guide for a detailed discussion of CASSIS operations.

F. Automated Patent System (APS)

APS provides on-line access to a data base which includes the full text of all U.S. patents issued since 1975. Pertinent classifications for particular subject matter may be determined by conducting a term search of the full text (or titles only) and then displaying the classifications of the resulting patents.

III. PATENT ANALYSIS FOR PLACEMENT INTO SYSTEM (CLAIMED DISCLOSURE)

As noted above, U.S. patents constitute the bulk of documents in our patent classification system. Therefore, class schedules are created and developed by considering the informational content of patents in the area of technology that a class is intended to serve.

However, disclosure of a patent is usually multifaceted and such disclosure is susceptible to varied analysis. To insure reasonably uniform placement of patents, and to provide for "infringement"-type searches, the claimed subject matter interpreted in light of the total disclosure contained in a patent has been selected as the primary basis upon which the informational content of the patent is considered. This narrows down to manageable proportions the subjective

judgements that must be made relative to the uniform placement of patents.

In as much as the total disclosure of a patent may include unclaimed subject matter of value, adequate provision is made for including such unclaimed subject matter in the system by cross referencing (see Section VI.). It must be emphasized that not every item of information included in every patent can or should be provided for. Generally, only that unclaimed subject matter characterized as either (1) new, (2) uniquely set forth to facilitate recognition, (3) particularly illustrative of significant details or relationships, or (4) providing helpful background or explanatory material is considered to warrant the placement of additional copies in appropriate subclasses for such subject matter.

This being said, the first step in the processes for: (a) the proper assignment of an application for examination, (b) determining a proper field of search, or (c) enscribing an issuing application with required or "mandatory" classification(s), is to determine precisely what is being claimed.

Each claim in an application or patent must be reviewed to determine which elements or subcombinations are embraced by that claim. Dependent claims frequently add additional subcombinations or elements to the organization claimed in its parent or independent claim. These additional subcombinations or elements could well affect the field of search and application assignment or classification upon issue.

IV. DETERMINATION OF A CLASS FOR ORIGINAL CLASSIFICATION OR ASSIGNMENT FOR EXAMINATION

Once the content of the claims has been analyzed, it may be found that the patent or application includes two or more claims which are drawn to diverse subject matter (i.e., are classifiable in different classes).

For search and retrieval purposes, merely placing a copy of the document in each class would suffice. However, for both administrative and legal purposes within the U.S. Patent and Trademark Office (e.g., insuring the examination of patent applications by the best qualified expert in the subject matter, restricting patent applications to properly related inventions, interference or infringement searches, etc.), there is a need to designate for U.S. patents a primary or "original" classification. All other classifications are designated as cross-references, and the corresponding patent copies are so labeled or stamped at the top of the cover page. The following selections relate to the basis on which the "original" class is chosen or how applications having multiple claimed inventions are assigned.

A. Original Placement Between Classes

The selection of the claimed invention which controls original classification or assignment is effected by considering in turn the factors listed below:

- Selection of the most comprehensive claim;
- Selection among statutory categories of subject matter when claims are of equal comprehensiveness;
- Selection among superiority of types of subject matter; and
- Selection among classes in "related subject" listing.

1. Selection of the Most Comprehensive Claim

The claimed disclosure setting forth the most comprehensive organization (for example, a claim to a combination as compared to a claim to a subcombination or element of that combination) controls placement of a patent or application among classes. This is illustrated by comparing the following two claims (which not only differ in comprehensiveness but also are directed to different categories of subject matter) each of which is assignable to a different class:

Claim 1. A laminated sheet comprising two panels of aluminum bonded with an intermediate layer of a binder, said binder comprising an elastic, self-vulcanizing rubber-like cement, the adjacent faces of the panels being roughened in a cross-hatched pattern to facilitate adhesion of the cement, two opposite edges of the sheet being notched with corresponding, interfitting dovetail cutout portions to facilitate securing the edges one to the other.

Claim 2. A process comprising scoring the faces of two aluminum panels in a cross-hatched pattern, applying a binder to the scored faces, pressing the coated faces together to secure the panels and forming a sandwich and then bending the sandwich and securing the opposite edges to each other to form a tube.

Claim 1 encompasses a product comprising a laminated sheet, Claim 2 encompasses a process of making such a sheet, but includes the step of bending the sheet and securing the edges to form a tube. Process claim 2 thus contains a greater extent of

subject matter than does Claim 1 and is therefore more comprehensive. Assuming that separate classes provided for the subject matter in Claim 1 and 2, respectively, a patent with these two claims should be placed as an original in the class providing for the subject matter of Claim 2.

2. Selection Among Statutory Categories of Subject Matter

Where a patent includes separate claims to two or more different statutory categories of subject matter and the claims are of equal comprehension, placement of the original is in the class providing for the claimed category which appears highest in the following list:

1. Process (of using product 2, e.g., using a fuel or radio transmitter)
2. Product (of manufacture, e.g., a fuel or radio transmitter)
3. Process (of making product 2)
4. Apparatus (to perform 3 or to make 2, e.g., machine, tool, etc.)
5. Materials (used in 3 to make 2)

For example, as between a claim to a radio transmitter (category 2) and a process of manufacturing the same (category 3) the claim to the transmitter would control class assignment. Similarly, a claim to a process of using the transmitter (category 1) would control over a claim to the transmitter or process of making it.

Modern patent classification schedules often separate statutory categories of related subject matter into different classes, or, if several are included in the same class, put them in different groups of subclasses, frequently in the priority given above.

3. Selection Among Superiority of Types of Subject Matter

a. Chemical subject matter

b. Electrical subject matter

c. Mechanical subject matter

(1) Dynamic (relates to moving things or combinations of relatively moving parts)

(2) Static (stationary things or parts nonmoveably related)

4. Selection Among Classes in "Related Subject" Listing (Last Resort Only)

The number of a class generally has no significance insofar as superiority of one class relative to another is concerned. It is a mere mark of identification which has been assigned arbitrarily. Nor does the list titled "Classes Arranged in Alphabetical Order" in the Manual of Classification set forth any order of superiority. The title of a class is an accident of language and would vary from one language to another. However, a theoretical organization of the applied sciences into three major areas is published in the front of the Manual of Classification and is titled "Patent Office Classes Arranged by Related Subjects." Within each of the areas the classes have been listed in a hierarchy suggesting an order of superiority.

Some class positions in the listing show superiority very well, whereas others show it less well or not at all. Notwithstanding, as a last resort, where the other bases for selection discussed above cannot be applied, a controlling claim is sometimes selected according to this listing. The controlling claim being identified as that which claims subject matter provided for by the class which appears highest in such listings.

5. Exceptions

Class definitions must be read for possible exceptions to the selection procedures discussed above inasmuch as disclosures in a given area of technology may have required deviation from these procedures. Any deviation will be mentioned, and explained, in a modern class definition.

The procedures outlined above presume that the class in which each claimed invention is classified is known to the person reviewing the claims. The following section

offers suggestions on how to determine which classification is most appropriate for any claimed invention where the class is not known.

V. SELECTION OF LOCUS FOR SEARCHING OR PLACEMENT

The following suggestions are offered for selecting a class whenever the appropriate class for a particular claimed invention is unknown. These suggestions should be applied to each claimed invention.

A. Selecting a Class

1. Index to Classification

Reference to the Index to Classification by patent title, a keyword of the title, a synonym thereof or any other descriptor of the claimed disclosure should provide one or more clues to particular classes (and often subclasses) relating to the subject matter involved.

2. Patent Office Classes Arranged by Related Subject

Reference to "Patent Office Classes Arranged by Related Subjects" on pages (I-5) - (I-18) of the Manual of Classification is often the best method of making an initial determination of the pertinent class(es).

3. Alphabetic or Numeric Listing of Classes

Reference to the alphabetical or numerical listing of class titles in the Manual of Classification may provide the necessary clue to the proper class.

4. CASSIS (WM Mode)

A term search of the subclass titles in the word mode (WM) of CASSIS, of the patent abstracts in the (PA) mode of CASSIS, or of the patent texts on APS may be conducted to isolate those classes/subclasses whose titles or patents contain a particular term(s).

5. Subclass Titles

A quick scan of subclass titles in a class suggested by 1-4 above is often very helpful in a first approximation of the pertinence of such a class to the subject matter being considered.

In every case the definition of the indicated class must be checked to verify the propriety of the proposed class selection. This selection requires that a class, as defined and further explained in the class notes, encompass claimed disclosure to the exclusion of other classes. Usually, the definition and notes of a class indicate where related subject matter is provided for and also set the lines of demarcation between and among such related subject matter. It should not be necessary to squeeze or "shoehorn" patent disclosure to fit a particular class definition.

6. Exceptions and Caveats:

a. Unless the definitions specify otherwise, a claim to an article of manufacture (a box for Class 229) distinguished solely by the composition or stock material from which it is made (a particular form of corregated paper for Class 428) is placed in the appropriate composition or stock material class--contrary to the selection procedure set out above.

b. A single claim to a hybrid of categories (such as a product defined by a process) is occasionally encountered in a patent or application. Under these circumstances, an application may be assigned to the proper process class for purposes of examination. If allowed, the claim should be classified in the proper product class and a cross reference copy may be placed in the process class where the application was examined.

c. Notes for the class definition of the class providing for a combination should be read for possible exception where the claimed disclosure is to a "nominal" combination. A nominal, or named, combination refers to a combination wherein one or more of the parts or steps thereof are recited so broadly, and without details, as to constitute a mere identification rather than a description of each part or step.

d. It frequently happens that an application will be received which claims too much for placement in either an element or a subcombination class but does not claim enough subject matter to clearly meet the requirements of a combination class. In these instances, assignment will generally be made to the

class providing for the larger organization, i.e., the combination class, instead of assigning it down to the lessor organization, i.e., the element or subcombination class.

e. Where the historical placement of patents having a particular claimed disclosure has been contrary to written definitions and notes, this will override all other considerations and will control placement of like subject matter until such time as corrective reclassification is effected.

B. Selecting a Subclass within a Class

Having once determined the most appropriate class for searching or placing a particular claimed invention, we must then determine which subclass best provides for the concept in question.

The following procedures for selecting a subclass are applicable to each individual claim in a patent or application (e.g., each claim must be considered separately for classification or search purposes). A separate mandatory classification is required for each claim which is classifiable in a different subclass. Likewise, each claim in an application should be considered separately to determine all critical search locations.

Before we begin a discussion of subclass selection, we will need to agree on the meaning of certain terms and phrases. The following schedule will help us with the definition of those terms and phrases.

The schedule appearing at the top of the next page is a hypothetical system used to sort and classify scrap in a junk yard.

1	COMBINED BAR, LINK AND BALL
2	COMBINED BAR AND LINK
3	COMBINED BAR AND BALL
4	COMBINED LINK AND BALL
5	CHAIN
21	. With end fastener
22	. With flaccid cover
23	. . Removable
6	BAR
7	LINK
8	BALL
9	. Hollow
10	. . Perforated
11	. . Grooved
12	. Perforated
13	. Grooved
14	. Mineral
15	. . Metallic
16	. . . Aluminum
17	. . . Zinc
18	. Rubber
19	. Ivory
20	MISCELLANEOUS

As can be seen, the schedule is similar to an outline used to write a term paper or the like. Each indented heading (subclass) further qualifies the heading (subclass) under which it is indented and, consequently, must be read as including all of the limitations of the superior heading (subclass) for example, subclass 10 is read as perforated hollow ball and will only accept items having at least these attributes. We use the qualifier "at least" deliberately. The reasons for this qualification will be explained below.

Those subclass titles which do not have a dot imposed between the title and numeric designator for the subclass are referred to as "Main Line" or "First Line" subclasses, e.g., subclasses 1, 2, 3, 4, 5, etc. Indented subclasses are referred to by their level of indentation. A subclass indented one level below a "main line" subclass is referred to as a "second line" subclass, e.g., subclasses 21, 22, 9, etc. Those that are indented one level below a "second line" subclass is referred to as a "third line" subclass, e.g., subclasses 23, 10, and so forth. All subclasses indented under a superior concept are generally referred to as that concept's "indents".

Subclasses positioned at the same level of indentation are also referred to as "coordinate" subclasses, provided that some superior subclass is not located between

subclasses being compared. While subclass 21 and 22 are coordinate with respect to each other, subclasses 22 and 9 are not, even though they are both "second line" subclasses, since subclasses 6, 7 and 8 intervene between these two subclasses. All "first line" subclasses are coordinate with respect to each other since nothing can be superior to a "first line" subclass.

1. Schedule Order

The order in which the subclasses appear in a schedule establishes the order of superiority between the concepts provided for in the schedule. The number assigned to a subclass title has no function other than to provide an address for the storage area in which the art physically resides. Location of the subclass title within a schedule hierarchy is paramount.

In a modern schedule, subject matter is hierarchically arranged with subclasses embracing the largest organization of elements, i.e., the most complicated structures provided for in the class, usually appear higher in the schedule than simpler subject matter. Our example shows this arrangement. We find that the organization of a bar plus a link plus a ball, i.e., subclass 1, which is the largest assemblage of elements, appears higher in the schedule than the lesser assemblages of a bar plus a link, or a bar plus a ball or a link plus a ball. The simplest elements, e.g., bars, links, and balls, are found even lower.

The modern schedule is also usually characterized by the placement of a "Miscellaneous" subclass at the bottom of the schedule, see subclass 20 in our example. They will frequently also have a "Combined" subclass located about midway down the schedule's length, e.g., subclass 192 of Class 222, Dispensing.

These two subclasses are similar in character. The "combined" subclass acts as a miscellaneous collecting point for the basic subject matter of the class combined with material provided for in another class when such combinations are not specifically provided for higher in the schedule. The "miscellaneous" subclass collects all subject matter properly placed below "combined" for which no specific subclass is provided.

See Appendix A for a further discussion of the details of a modern schedule.

As noted earlier, the classification system as it exists today was created over the course of the last 100 years. Vestiges of older systems are still present in our system and it is important to distinguish the older classes from the modern classes since they were created using a different theory of schedule structure and art placement. When you use these older classes, you should adjust your search and placement strategies accordingly.

In the older classes, the "miscellaneous" subclass almost always appears as the first subclass in the schedule array. In this position, it assumes the function of both the "combined" subclass and the "miscellaneous" subclass in the modern schedule. It provides a home for all unprovided materials admitted to the class by its definition. It, therefore, accepts unprovided for combinations of the basic subject matter of the class and structure provided for in other classes, unprovided for basic subject matter and unprovided for subcombinations or elements found in the class. When placing a document or conducting a search in one of these older classes, one must first scan the main lines below "miscellaneous" to see if they provided for the subject matter in question. If no subclass is found, "Miscellaneous" is the proper locus.

2. Inclusive Nature of Subclasses

A second important characteristic exhibited by our classification schedules is the exhaustive nature of subclasses. This means that a subclass will take all claimed disclosures that at least recites the subject matter provided for in the subclass.

Thus, in addition to providing a home for claims exclusively directed to the provided for subject matter, a subclass will also accept all combinations employing the provided subject matter as a subcombination thereof which combinations are proper for the class and which do not find a home higher in the schedule. A subclass will also provide for the recitation of multiples of the concept recited unless a subclass is provided higher in the schedule for the multiples.

Given the concepts of hierarchy and the inclusive nature of subclasses, the modern classification schedules can be viewed to be a series of sieves

or strainers located one above another (see Illustration A on the next page). Those sieves which are located higher in the array have larger diameter apertures, so they strain out only the largest particles, i.e., the largest organization of claimed elements. As we move down through the series, the aperture size decreases, consequently trapping smaller sized organizations. This process continues all the way down the series until we reach the bottom, i.e., the "Miscellaneous" subclass, which traps whatever was not caught above.

If material is dropped into the top of the sieve array, it will pass through the array until an aperture is reached which blocks further passage of the material. So it is with a modern classification schedule. When we want to place or retrieve (i.e., search) a concept using a schedule, we start with the first subclass in the class and proceed to move down through the "first line" subclasses until we find one that will accept any claimed subject matter. This subclass exhausts the claimed subject matter and all concepts employing this subject matter. We should not have to look at any lower "first line" subclasses in the schedule for art pertinent to this subject matter.

Since subclasses are inclusive, once you have selected an appropriate subclass, you may have to consider subclasses located higher in the schedule than the one you have selected. Let's refer back to our junk yard example on page 13. Suppose, as I was sorting through my pile of junk, I ran across a bar. I had to decide what bin to store that bar in. I would consult my schedule, starting at the top and scan down. Subclass 1 provides for bars but these bars must be combined with certain other elements, i.e., links and balls. Unless at least all three are present, classification in bin 1 is not proper.

209-680 EX 1,141,727 Cross Reference [redacted] - [redacted] Examiner

N

A. F. SEAMAN.

SHOE BUTTON SEPARATOR.

APPLICATION FILED JULY 17, 1913.

1,141,727. Patented June 1, 1915.

Fig. 1

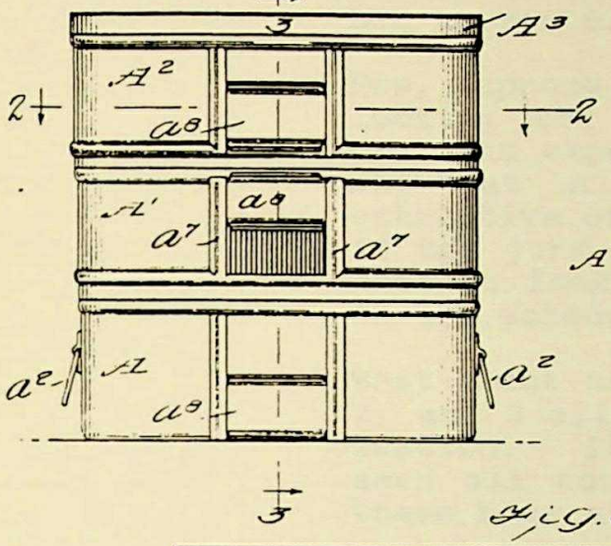


Fig. 2.

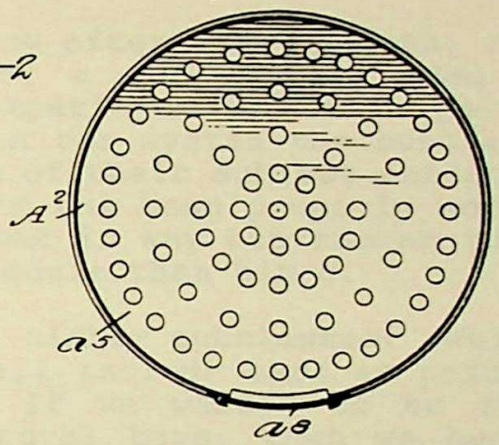
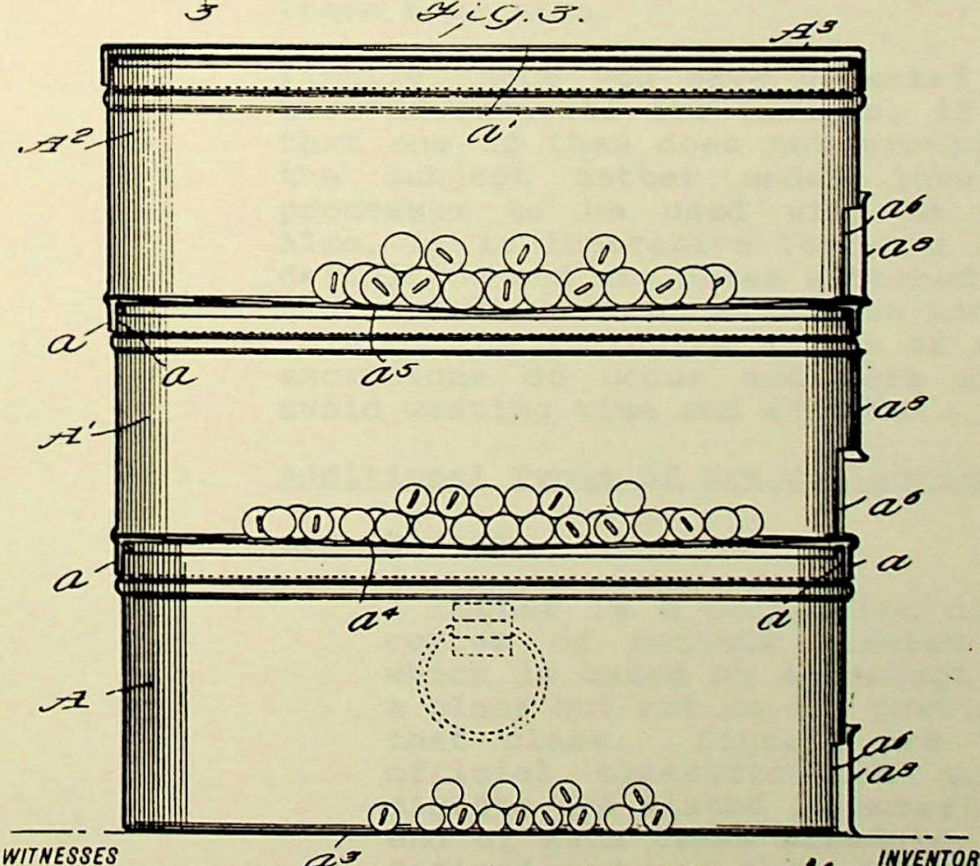


Fig. 3.



WITNESSES

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All I have is a bar, so subclass 1 is not proper. Subclasses 2 and 3 also provide for a bar. Again, this bar is combined with some other feature, i.e., a link in one case and a ball in the other. The first subclass that will accept a bar by itself is subclass 6. Accordingly, I assign this bar to bin 6.

Now, suppose after a few months, some one comes in looking for a novel bar. You know from your previous experience that bars per se are in bin 6 and that in our system the subclasses or bins are exhaustive of their subject matter. Consequently, if the junk has been properly sorted, there is no need to look in any bin number that appears lower in our schedule than bin 6.

What about higher subclasses? Well, subclasses 1, 2, and 3 all include bars as part of their organization. If we wanted to be sure that we had seen all novel bars, then we had better look in these bins also.

Finally, once you have selected a subclass, you must investigate its indents, if any, to be sure that one of them does not provide more fully for the subject matter under investigation. The processes to be used will be discussed below. Also, it is imperative that you read the subclass definition and any notes attached to it to be sure that there isn't an exception made to the general rule of the inclusive nature of subclasses. Such exceptions do occur and care must be taken to avoid wasting time and effort.

3. Additional Types of Art Collections

a. Digest

A Digest is a collection of cross reference copies of patents created by an examiner which is based on a concept which relates to a class but not to any particular subclass of that class. Digests are "outside" of the official classification arrangement. The digests are listed in numeric sequence at the end of each class schedule. Digests are not defined and are not available in the public search file. A Digest may be created only as an interim measure during the course of a reclassification project, and must be converted to either an official subclass or a cross-

reference art collections when the project issues.

b. Cross-reference Art Collection

Cross-reference art collections differ from digests in that the material involved in the art collection is defined to some degree and the patents are available in the public search room. Some art collections include indentation levels, placement in these areas is intended to follow official patent placement procedures. Art collections are usually listed in numerical sequence at the end of each class. In many classes, subclass numbers 900 - 999 have been reserved for these art collections.

c. Unofficial or Alpha Subclasses

Over a span of years, Patent Examiners have created "unofficial" subclasses to facilitate searches within the arts under their jurisdiction. In this process a grouping of patents is selected from an official subclass and then made an indented subclass under the official subclass with an alpha designation following the official numeric designation. Since the original subclass no longer has all the patents officially classified therein, it is given the alpha designation "R" (indicating residual). It should be noted that the numeric subclass located in the Public Search Room equates to the residual subclass plus the unofficial subclasses indented thereunder. There are no definitions for the unofficial subclasses, nor is it contemplated to define these subclasses beyond the context of the titles and the definitions of the official subclasses from which they were formed (R subs). The unofficial subclasses have been "double indented" under the subclass from which they were formed as an indicator that the usual rules of hierarchy do not necessarily apply to these subclass groupings. These art collections are offered only to the extent they may be helpful as a search assist and should not necessarily be considered to be a completed collection of the art represented by the title. As with Digests, alpha subclasses may be created only as an interim measure

during a reclass project, and must be converted to official subclasses when the project issues.

4. General Methodology

a. To reiterate, once the proper class is identified, it is necessary to select the proper subclass by scanning down the schedule of the class from the first appearing subclass toward the last. Only first line subclasses (the titles of which are fully capitalized) are considered on the initial scan. Each first line subclass is evaluated (title checked against definition if necessary) until a first line subclass is reached that provides for that claimed disclosure. Where a first line subclass cannot be selected using the claimed disclosure, the claim is classified in either the combined or the MISCELLANEOUS subclass--even if a subclass can be selected using the total or unclaimed disclosure.

b. If such a first line subclass has coordinate subclasses indented thereunder, these indented (second line) subclasses must in turn be scanned and evaluated individually to determine the first or highest subclass, if any, which provides more specifically for the claimed disclosure (see Section V.10. for placement within Alpha Arrays).

c. If such an indented, second line subclass itself has coordinate indented subclasses, the above process is repeated until the ultimate indented subclass is reached that provides for the claimed disclosure.

5. Indenting by Total Disclosure

Having determined the placement in a particular subclass solely on claimed disclosure, in most cases, consideration must still be given to the total disclosure in connection with placement in further indented subclasses (if any). There are generally two forms of subclass or schedule array, each of which exhibits a different pattern of patent placement in the indented subclasses of the respective array. The selection procedure for each form is set forth below. See sections V.B.7 and V.B.8 for the rule pertaining to the placement practices in chemical schedules.

6. Combination-Subcombination Rule

The following fragment of a schedule is used to illustrate a typical combination-subcombination relationship among subclasses.

253 ROLLING MEANS TO FORM SHEET OR STRIP
255 . With corrugating means
254 . With treating means
256 . Roll coacting with planar platen
257 . . Reciprocating platen

Here, the first line or major subclass (253) is a subcombination of subclasses indented thereunder. That is, subclasses 255 through 257 are to greater combinations that provided for by the parent subclass 253. But subclass 253 is also inclusive of its own subject matter in combination with other subject matter not provided for in subclasses 255-257.

A patent which is otherwise proper for subclass 253, by the procedures relating to claimed disclosure set out in V.B.4.(a-c) above, would in fact be placed in one of the indented subclasses 254-257 if the total disclosure included limitations of the indented subclasses. For example: a patent claiming a roll mill for strip forming and also disclosing means to corrugate said strip would be placed in subclass 255.

Where such further disclosure meets the term of an indented subclass such as 256 and also the still further indented subclass 257, the patent is placed in the appropriate ultimate indented subclass.

Where such further disclosure meets the terms of two or more indented subclasses coordinate with each other (as 255 and 256), the patent is placed in the first of said coordinate subclasses.

A patent having a claim to subject matter of subclass 253 and a disclosure for subclass 256, but also including a claim to a combination not provided for under subclass 253, is placed in subclass 256 irrespective of the presence of the disclosure of the unprovided for combination. Therefore, a combination not provided for or subcombinations encompassed by subclass 253 title and definition must be searched in the parent (253) and all indented subclasses thereunder (255-257). However, a search to a combination provided

for by an indented subclass is limited to that subclass, and the preceeding coordinate subclasses. As a practical matter, most Examiners and Classifiers have adopted the practice of placing a cross reference copy in the parent (or subcombination) subclass when the patent contains a claim to an unprovided for combination, particularly where the number of indented (or combination) subclasses is excessively large.

7. Genus-Species Rule

The genus-species rule assumes that each species subclass is mutually exclusive of all other species encompassed by their generic subclass. Therefore, in many class schedules exhibiting a genus-species relationship, a variant to the above combination-subcombination rule is followed.

In a genus-species subclass array where plural species are indented under the generic subclass, placement is on the basis of total disclosure where only generic claims appear in a patent having disclosed species. A patent having genus claims only, but disclosing provided-for species, is placed in the first appearing disclosed species subclass.

A patent having genus claims only and a disclosure to an unprovided-for species is placed in the generic subclass, as the generic subclass is the first appearing subclass that can take the unprovided-for species.

For example, in the following subclass array:

1. Generic subclass (SPRING, e.g., Torsion, etc.)

2. . Subclass species A (Coil)

3. . Subclass species B (Leaf)

a. If a generic claim only is present with disclosure of species A and B, the patent is placed as an "Original" in subclass 2 (and XR'ed to subclass 3).

b. If a generic claim only is present with disclosures of species A and C (Torsion spring), the patent is placed as an "Original"

in the generic subclass 1 (and XR'ed to subclass 2).

Stated generally, where in addition to the generic claim there is a claim to provided-for species, the patent is placed as an "Original" in that species subclass unless there is also a claim to an unprovided-for species, in which latter case the patent is placed in the generic subclass.

For example in the subclass array above:

c. If a generic claim is present, a claim to species A and a disclosure to species C, the patent is placed as an "Original" in subclass 2 (and XR'ed to the generic subclass 1).

d. If a claim to species C is present and also a claim to species A, the patent is placed as an "Original" in generic subclass 1 (and XR'ed to subclass 2).

In all of the above instances, cross reference copies are placed in appropriate subclasses. Thus, a generic search, to be complete, must include the genus subclass and all indented species; a complete search for a provided-for species need be made in only that species subclass; and a complete search for an unprovided species need be made only in the generic subclass. One must be aware, however, for the presence of species which are not mutually exclusive. In the example used above, assume the presence of a third indented species subclass entitled "Plastic" and located above subclasses 2 and 3. Since any of the other species (i.e., torsion coil or leaf) could also be formed from a plastic material, none are mutually exclusive with respect to the "Plastic" species. Therefore, a search for either the torsion coil or leaf spring should include the subclass entitled "Plastic". One final note: if the "Plastic" spring subclass were located at the bottom of the array, a search for a coil or a leaf spring would be confined to subclasses 2 and 3, respectively. This is due to subclass schedule hierarchy, and the exhaustive nature of subclasses, which was explained in Section B. above.

8. Placement of Markush type claims

In some chemical applications or patents, as sanctioned by Ex parte Markush, 1925 C.D. 126, a

"genus" claim may be set forth as a group consisting of certain specified materials. That is, when there is in fact no commonly accepted generic expression commensurate in scope with the materials recited (see MPEP 706.03(y)). An application or a patent may thus have a Markush "genus" claim with or without other claims to the specified materials, per se, such specified materials being "species" of the Markush "genus". The same principles set forth above, with respect to genus-species array, govern the placement of applications or patents with Markush type claims. For example, given the following subclass array:

1. Generic subclass (organic compound)

2. . Species subclass (A) - ester

3. . Species subclass (B) - alcohol

a. Where a Markush group is disclosed but only claimed as "species A (ester)" and "species B (alcohol)" the document is placed as an "Original" in subclass 2 with a XR to species B in subclass 3.

b. Where a Markush group is claimed as "consisting of A (ester), B (alcohol), and C (ether)" the original is placed in generic subclass 1 with a XR to species subclasses 2 and 3. The individual members of the Markush group are treated independently and the member C is provided for only in the generic subclass 1.

c. Where a Markush group is claimed as "consisting of A (ester), B (alcohol), and C (ether)" and there is also a claim to A (ester), per se, the original classification is to species subclass 2 with a XR to generic subclass 1 and to species subclass 3. That is, a patent having a claim to a Markush group is placed as an original in the genus subclass only when individual species are not claimed. The classification of the claimed species controlling placement of the original.

9. <u>Mixed Array (Genus-Species and Combination-Subcombination)</u>

A subclass schedule which includes both combination subclasses and species subclasses indented under a

common genus-subcombination subclass is categorized as a mixed array, e.g.:

1. SPRING (subcombination of a mechanism)
2. . Coil (species A of spring)
3. . Leaf (species B of spring)
4. . With Indicator (combination)
5. . With Lubricating Means (combination)

The following rules of placement have been used in such mixed arrays:

a. Where a combination or subcombination is claimed which includes a coil spring (A), the "original" placement is in subclass 2. No XR is needed since by schedule superiority all subject matter including A should be in subclass 2.

b. Where one claim includes a coil spring plus an indicating means and a second claim includes a torsion spring (an unprovided for species) plus an indicating means, the placement of the original is in subclass 2 with a XR to subclass 4. All coil springs and combinations claiming a coil spring are in subclass 2 and all combinations including an indicating means, not provided for in preceding subclasses, are in subclass 4.

c. Where one claim is to a coil spring plus an indicating means and a second claim is to a torsion spring, per se, the placement of the original is in subclass 1-the first subclass accepting an unprovided for species-with a XR to subclass 2.

d. When one claim is to a coil spring plus an indicating means and a second claim is to a torsion spring plus an unprovided for element Z, the placement of the original is in subclass 1 with an XR to subclass 2--as in c. above.

10. Placement Within Alpha Arrays

The unofficial alpha subclasses provide for original and mandatory classification. The following example is the preferred mode of placement. Since

general rules have not been formulated, the example does not necessarily pertain to every alpha subclass in the system.

273R	. Bituminous material or tarry residue containing
273N	. . . Nitrogen containing
274	. . With sulfurizing or sulfonating agent
275	. . . With filler, dye or pigment
276	. . Rock asphalt
277	. . Bituminous emulsion
278	. . With solvent or dispersing medium
279	. . With flux
280	. . . With filler, dye or pigment
281R	. . With filler, dye or pigment
281N	. . . . Nitrogen containing
282	. . . Fibrous containing
283	. . . Water containing

A claim to a nitrogen containing flux mixed with a bituminous material is classified in subclass 279 although it would appear from the classification schedule that subclass 273N provides for all nitrogen containing materials. The rule that should be followed is the same as if the class did not provide for any alpha subclasses at all, in this regard the R or residual subclasses are not viewed as alpha subclasses. First, only the two dot subclasses, i.e., 274, 276, 277, 278, 279 and 281R, are scanned after subclass 273R is identified as the proper home for the claimed subject matter. If, in accordance with the earlier discussion, none of the official two dot subclasses provide for any of the claimed subject matter, placement into the generic subclass 273R is proper.

Once placement in 273R is indicated, it is proper to consider 273N, which merely provides for concepts in 273R per se.

The same rationalization is true for subclass 281N. Only when subject matter is otherwise deemed proper for 281R is 281N to be considered. It must be remembered that once a two dot subclass has been determined as being proper, it is permissable to further scan the official three dot subclasses thereunder. With respect to 281N, placement is proper therein only after official subclasses 282 and 283 have been evaluated and found as not providing for any of the claimed subject matter. For instance, a nitrogen containing

fibrous material as a filler should be placed in subclass 282 rather than in 281N.

The most serious problem of proper patent placement into alpha subclasses arise when a series of alpha subclasses is listed sequentially. Since definitions are not available and since it is not known as to whether official rules of patent placement have been followed, a search in these areas could involve searching all of the alpha subclasses as well as the residual R subclass.

The creation of alpha subclasses was merely an interim attempt to provide smaller segments of search on a more detailed basis and in accordance with the needs of the Examiner in that particular art.

A serious attempt is now being made to change the alpha subclasses to numeric subclasses and to limit the creation of any new alpha subclass. When this is accomplished, the public search file will be identical to the examiners search file and the subclasses will have definitions and will more closely follow classification guidelines.

11. Noncomformity in Practice

It is necessary to be on the alert for past diversity of practice respecting placement within a class on disclosure. Thus, one must vary search techniques to compensate for such diversity. Nonconformity has nearly always been of the following type:

a. In some cases, the practice of carrying placement to a subclass as practiced in a parent subclass with indented combination subclass array has been extended unofficially to a genus-species subclass array. In such instance, an unprovided-for species, even when claimed, has been assigned to a subclass providing for another species which has also been disclosed. This has often been done with no cross reference back to the generic parent subclass. When such a condition is known or detected, an unprovided-for species must be searched in the parent generic subclass as well as all species subclasses indented thereunder.

VI. ORIGINALS VS. CROSS REFERENCES

A. Mandatory Classifications

By determining the classification designation of each claim in a patent separately, and then assigning a copy of the patent to each separate classification designation, we may be reasonably assured that the claimed subject matter contained in the patent is retrievable. Each such classification is a mandatory classification, and the original classification is selected from among these mandatory classifications as being the highest in the schedule (superiority) of the class containing the controlling claim (see section IV.A. above). The remaining mandatory classifications are designated as CROSS REFERENCES (XR) and the patent copies are so labeled.

B. Discretionary Classifications

Also designated as CROSS REFERENCES are any number of additional classifications which are deemed appopriate by the Classifier or Examiner, within the guidelines set forth below. These cross-references may provide for disclosure not encompassed by the claims, or for claimed subject matter which may be useful in classifications other than the mandatory classifications determined by the placement procedures in Sections V A-B. The question of what unclaimed subject matter should be cross referenced, and where, must be left to the judgement of the Classifier or the Examiner expert in the art. Since there is a presumption that unclaimed subject matter is not new, it may be of little value. However, this is not always true and much of this subject matter must be cross referenced to make it available to a searcher. There are no exact rules. When, in the judgement of the Classifier or Examiner, the subject matter is novel and is disclosed in sufficient detail and clarity to be useful as a reference, it should be cross referenced.

1. Cross References to any part of system

Unfamiliar subject matter should not be ignored. If a specific composition, electrical circuit, joint support, etc., is disclosed, it should not be assumed that it is conventional or not useful merely because it is not claimed. A Classifier or Examiner having experience in such unfamiliar art should be consulted to determine if a discretionary cross reference would be useful.

2. Cross Referenced Subject Matter Must Fit Subclass Definition

Subject matter should be cross referenced to a subclass if it fits its definition, but since the ultimate object is to aid the searcher, a large amount of discretion may be used.

3. Techniques Used to Limit Cross Referencing

In creating the U.S. Patent Classification System, several techniques have been used to limit the amount of discretionary cross referencing. These consist of (1) proper positioning of subclasses in a class schedule and (2) search notes.

a. Cross Referencing Between Classes

The existence of a search note in the class definition of each of related classes generally precludes the need for discretionary cross referencing. However, where a combination-subcombination relationship exists, a search note in the class definition does not preclude the need for cross referencing a particular disclosure when a specific subclass for such disclosure is provided in a class other than that in which a patent has a mandatory classification. Also, a patent classified in a class providing for a subcombination (e.g., a machine tool chuck) should not be cross-referenced to a combination Class (e.g., machine tool) solely on the basis of the subcombination.

b. Cross-Referencing Between Subclasses

The following general considerations apply to the placement of discretionary cross reference copies:

Where two subclasses (either in the same or separate classes) contain subject matter related in structure or mode of operation but which are separated on different functional bases, the provision of a search note in each subclass referring to the other subclass precludes cross referencing from either subclass to the other.

Where two coordinate subclasses have a combination-subcombination relationship and the

subcombination subclass title consists of the identical terminology of a portion of the combination subclass title, or a subclass indented thereunder, and a search note is provided in the subcombination subclass indicating that the combination subclass or the subclass indented thereunder must be searched when conducting a search for the subcombination. No cross references are made from the combination subclass, or subclass indented thereunder, to the subcombination. However, a disclosure of a combination in a patent placed in the subcombination subclass may be cross referenced if it is believed to be useful.

Where two coordinate subclasses have a genus-species relationship (the species subclass appearing first in the schedule), generally no cross reference of such species is made to the genus subclass.

Where there are two subclasses, the first of which contains a voluminous number of patents having disclosures directed to subject matter which could be cross referenced to the second subclass but which fact is not evident from the titles of the subclasses, a search note is generally provided in the definition of the second subclass indicating that the first subclass must be searched and no patents are cross referenced from the first subclass to the second subclass.

Generally, no cross reference is made within a class when the relative schedule position of the subclasses involved indicates that a search for the disclosure would include both subclasses.

In each of the above situations, it is quite common to find one or two cross references, irrespective of the presence of a search note. This has been done to alert a searcher who may have overlooked the search note to a pertinent field of search.

c. <u>Cross Referencing Between a Parent Subclass and its Indents</u>

The two most frequent types of relationship between a parent subclass and subclasses

indented thereunder are (a) combination-subcombination and (b) genus-species.

(1) In the type involving the combination-subcombination relationship, that is, where the indented subclass is directed to a combination, which includes the subject matter of the parent subclass as a subcombination thereof, cross referencing between such subclasses is generally avoided.

(2) In the type involving the genus-species relationship, that is, where the parent subclass is directed to a genus and the indented subclass is directed to a species, the general principle is that there should be no search notes therebetween, but cross referencing may be made either from the genus subclass to an indented subclass or from an indented subclass to the genus subclass.

d. Search Notes in a Subclass Does Not Preclude Cross Referencing in an Indent Thereof

A note in a first subclass indicating that a second subclass should be searched in connection with a search for the subject matter of such first subclass, does not preclude cross referencing of a patent from such second subclass to a subclass indented under such first subclass and directed to a specific variant thereof.

C. Original Designation

Only those patent copies labeled as "original" (OR) are accorded evidential value to construe titles, definitions, and notes. This is due to that fact that discretionary cross references often reflect a great deal of subjective judgement on the part of a Examiner or Classifier, and there is no distinction made between mandatory and discretionary cross references in the labeling of patent copies. Thus, for the purpose of (a) resolving differences as to placement of a patent application or a patent or (b) demonstrating separate classifications or divergent fields of search in an Examiner's requirement for restriction, only patents placed as originals may be cited. There is no difference at all with respect to the

reference value of an original and cross reference patent.

ADDENDUM
Reclassification in Classes 518-585

Class 260, the class of organic chemistry, contained the largest array of patent documents in the PTO. A number of years ago, it was decided that this class was in need of reclassification as the concepts did not necessarily address new technology and because many of the subclasses therein were a burden to search because of their size.

It had been decided that a new format as to reclassification had to be adopted so that the results of the reclassification project could be used as soon as possible. It was not practicable to reclassify the entire class, as had been done in the past, and to await the publication of the new class and subclasses created, since publication could take a number of years.

It was finally decided to segment Class 260 into a number of smaller individual reclassification projects so that the results could be published and usable for search as any number of art areas were further being reclassified.

The result of the above approach has been the publication of a number of individual Classes, 518-585, that replace certain subclasses and concepts in Class 260. Where the subclasses have been replaced in Class 260, the individual subclass areas are noted by a reference box in Class 260 indicating the new search areas. Eventually, Class 260 will be completely reclassified and will be abolished. In the Classes 518-585, Classes 520-529 are considered the 520 series and 532-570 are considered another series. The others are independent Classes even though the patents came from Class 260.

Within the newly established Classes, the schedule hierarchy as indicated by the Class number indicates superiority as to placement. For instance, Class 525 is superior to Class 528 and Class 544 is superior to Class 560. These series are to be used as if they are merely subclasses. The Class numbers merely indicate positions as to subject matter. Each of the Classes after 520 and 532 have been noted by upper case characters followed by a one dot indentational level with a carry over on the top of the manual page indicating the appopriate series, i.e., 520, 532-570. The general rules of patent placement in Section V.B.1. of this handbook applies to the 520 and 532-570 series.

Appendix A

STRUCTURE OF THE MODERN SCHEDULE

Over the course of the years, the PTO has tried many schemes to provide a framework which will both lend uniformity to the entire classification system and at the same time optimize a class's usefulness as a search aid.

The present philosphy on the organization of patent data was formulated in early 1964 and finalized in a publication called the "Development and Use of Patent Classification Systems" (DUPACS). This publication was issued in January of 1966 and is now out of print; however, a number of copies still exist in each group in the Examining Corps.

This document sets forth a model (given below) which should be used in the creation of a new classification system, i.e., a class. It must be recognized at the outset that this model is a theoretical standard and many deviations will be found in practice. The primary reason for these deviations is that all classes are built based upon a thorough review of the art contained in the new class. The structure of the class is dictated by the art itself. This review of the actual documents frequently causes modification of the theoretical model.

The specific arrangement of the subclasses within a schedule will define that schedule's hierarchy as noted in the main portion of this handbook. This hierarchy will almost invariably arrange the subject with the most complicated and comprehensive material at the top of the schedule and the simpler material lower in the schedule.

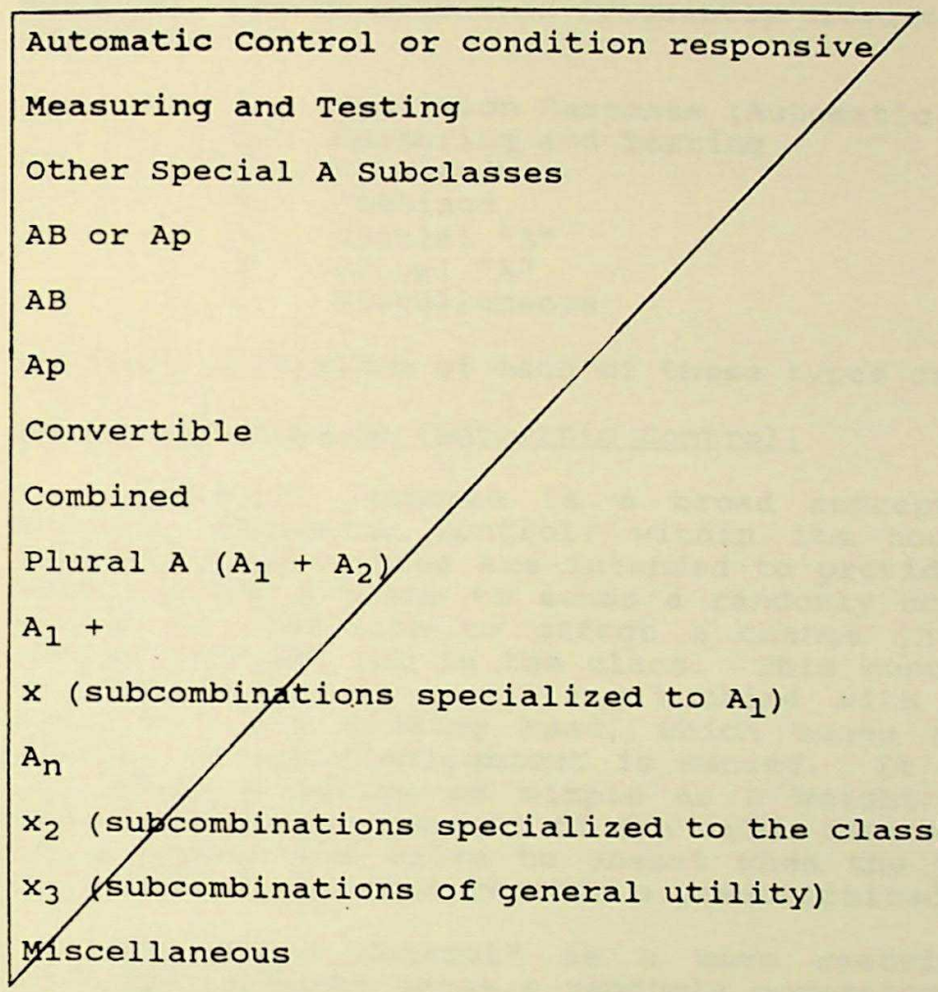
Further, all modern schedules exhibit exhaustive subclasses. This concept is likewise discussed in depth in the main body of this handbook.

With these preliminary thoughts and reservations in mind, we will now discuss the preferred theoretical structure of the "Modern" class.

The "modern" class is often represented as an inverted right triangle.

—

CLASS OF BASIC SUBJECT MATTER A



As can be seen, the subject matter arranged in the above scheme ranges from the most complicated at the top of the triangle to the simplest at the bottom. There are four characters of subject matter in the above representation, i.e., A, AB, Ap and X. "A" represents the basic subject matter of the class, e.g., in a class of pumps, "A" would be he types of pumps found in the class, e.g., jet pumps, reciprocating pumps, etc. "AB" represents the basic subject matter combined with subject matter having a different proximate function, effect or product, that is, the subject matter of another class, e.g., a pump combined with and driven by a vehicle. "Ap" represents basic subject matter combined with a perfecting feature, i.e., some structure that enhances or improves the operation of basic subject matter device, e.g., an intercooler located between stages of a pump which improve the overall efficiency of the pump by carrying away unwanted heat generated during the pump's operation. Finally, "X" represents subcombinations of the basic subject matter or elements peculiar to or associated with the basic subject matter, when such subcombinations or elements are not specifically provided for in some other class, e.g., pump casings, etc.

In addition to subclasses providing for the above noted material, modern schedules frequently provide for these additional concepts:

a. Condition Response (Automatic Control)
b. Measuring and Testing
c. Convertible
d. Combined
e. Special "A"
f. Plural "A"
g. Miscellaneous

A brief description of each of these types of subclasses follows.

Condition Response (Automatic Control)

Condition response is a broad concept that embraces the varient, Automatic Control, within its boundaries. Condition responsive subclasses are intended to provide a home for devices that include a means to sense a randomly occurring condition or change in condition to effect a change in the operation of a device provided for in the class. This concept embraces devices as complicated as a milling machine with means to sense the position of a cutting head, which means acts to disable the machine if any misalignment is sensed. It also includes within its scope a device as simple as a weight biased check valve, wherein the under surface of the valve seat senses fluid pressure which causes the valve to unseat when the pressure against the underside of the seat reaches a predetermined point.

"Automatic Control" is a more restrictive concept which includes means to sense a randomly occurring condition or change of conditions which operates on a separate means to effect control of an apparatus, e.g., the milling machine mentioned above. This concept requires a sensor, e.g., a slipper or feeler located adjacent the system, which senses a condition, or change in condition, e.g., tool misalignment. Once this condition is sensed, the sensing means operates on another device, e.g., a switch or valve, which controls a different medium to regulate the operation of the controlled device. There has been a tendency in recent years to move away from the title "Automatic Control" and to substitute the title similar to "Control Means Responsive to Sensed Condition".

Another concept closely allied to Automatic Control is Programmed or Cyclic Control. These devices frequently include sensors; however, the device employing the sensors merely perform repetitive operations. There is a basic "law of the machine" and the sensors are actuated in sequence to control the operation of the device based on that law. In other words, the condition sensed is predictable rather than random.

Also embraced by this concept are those devices that employ stored intelligence, e.g., magnetic tape, to control the operation of the machine in a prescribed, repetitive fashion.

These subclasses are generally grouped in the same area of the schedule and this area is generally relatively high in the schedule.

Measuring and Testing

Many classes provide for their basic subject matter combined with some type of measuring or testing device. This organization represents a special type of "AB" combined subclass. It is no different in character than any other "AB" type subclass. It is only distinction is its frequent occurrence.

Combined subclasses drawn to a class's basic subject matter combined with heating or cooling means or lubricating means are likewise frequently found in many modern classes.

Convertible

This subclass provides for devices which, while they are the basic subject matter of one class, are intended to be changed into the basic subject matter of another class by a rearrangement of their parts. This concept also provides for the change of one type of device provided for in a given class into a different type of device also provided for in the the same class by rearrangement of the parts of the device.

Combined

As noted in the handbook, "Combined" represents a dividing point in the schedule. Unless a note to the contrary appears, this subclass is exhaustive of all combinations, i.e., "AB" type and "Ap" type, subclasses not provided for higher in the schedule.

Generally, as noted above, all subclasses appearing below "Combined" will be drawn to either the basic subject matter of the class or to subcombination and elements peculiar to or associated with that subject matter.

"Combined" therefore is in practice a "Miscellaneous" subclass for combinations not provided for elsewhere.

Special "A"

It frequently happens that special collections of unique basic subject matter are provided very high in the class schedule. These collections are of special search value and would very probably be lost if they were positioned lower in the schedule. This collection will also appear above the "Combined" subclass

even though they are not very comprehensive and are not drawn to combinations or basic subject matter plus perfecting feature. An example of one such collection is drawn to getter type pumps in Class 417.

Plural "A"

Another type of collection that frequently appears in a modern schedule is one drawn to systems employing multiple devices provided for in the class. The multiple devices may be of the same type or they may be different types, e.g., two diaphragm pumps connected in series or a diaphragm pump and a reciprocating piston type arranged in the same fashion.

This subclass is usually positioned immediately below the "Combined" subclass.

Miscellaneous

In almost all modern schedules, the last subclass contained in the schedule is "Miscellaneous". This subclass is defined in extremely broad terms and is intended to be exhaustive of all subject matter admitted to the class but not provided for higher in the class. Each "main line" subclass is exhaustive for the material provided for in that main line; however, there will always be a residue of material that does not fit the existing "main lines". If a "Combined" subclass exists in the schedule, only unprovided for basic subject matter and unprovided for subcombinations and elements will be found in "Miscellaneous". It must be remembered that "Combined" is exhaustive of combinations of the basic subject matteer and the subject matter of some other class.

The above model is just that, a theoretical model, and many deviations will be found in practice, e.g., Classes 198 and 251 contain no "Combined" subclass even though they are modern classes. This omission was a conscious act of the Classifier involved and was dictated by the nature of the art embraced by the class.

One must always carefully review a schedule while using it to look for exceptions from this model.

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